manifests the first Fourier spatial coefficient for the flow asymmetry manifested by said static pressure signals; for storing a first value representing a desired magnitude for said flow asymmetry signal; for providing a first processor signal that manifests the square of said asymmetry signal; for providing a second processor signal that manifests the difference between said asymmetry signal and said first value; for providing a derivative signal manifesting the time rate of change of said total pressure signal; for integrating said second processor signal to produce an integration signal; for providing a control signal that manifests the sum of said first processor signal, said derivative signal and said integration signal; and

a compressor bleed valve for discharging compressor flow as function of the magnitude of said control signal to reduce the magnitude of said first signal.

23. A method of controlling compressor fluid flow in a rotary compressor characterized by:

sensing compressor fluid flow static pressure at locations along the circumference of the fluid flow to produce first flow signals;

sensing axial mass flow to produce a second flow signal that manifests a time rate of change of the mass flow of said fluid in the flow path;

providing a first processor signal from said first signals with a value that manifests the magnitude of circumferential asymmetry of said fluid flow around said axis;

adding said first processor signal with said second signal to produce a control signal; and

reducing the value of said first processor signal by altering the magnitude of said mass flow as function of the magnitude of said control signal.

24. The method described in claim **23**, further characterized in that said first processor signal manifests the square of said magnitude of circumferential asymmetry.

25. The method described in claim **24**, further characterized in that said magnitude of circumferential asymmetry is the first spatial Fourier coefficient.

26. The method described in claim **23**, further characterized by producing a second processor signal that manifests the integral of said first processor signal and adding said first processor signal, said second processor signal and said second signal to produce said control signal.

27. The method described in claim **26**, further characterized by providing said second processor signal by limiting said integral to a constant of zero or greater when said integral is less than a first range of values and to a constant maximum constant value when said integral is greater than said first range of values.

28. A stall and surge controller for a compression system, the compression system including a compressor with a flow path disposed about a flow axis, the controller including:

means for monitoring the flow through the compressor comprising:

means for sensing circumferential asymmetry of the fluid flowing within the flow path of the compressor to produce a parameter a that corresponds to the amount of asymmetry; and

means for sensing perturbations in the time rate of change of mass flow throughout the flow path of the compressor to produce a parameter d that corresponds to the size of the perturbation; and actuation means for modifying the flow field within the flow path of the compressor responsive to the sum of a and d according to the control law comprising:

$$A=k_1\alpha+k_2\delta$$

where A corresponds to the amount of flow disruption produced by the actuation system, k_1 is a predetermined gain for the asymmetry parameter α, and k_2 is a predetermined gain for the time rate of change of mass flow perturbation parameter δ.

29. The controller according to claim **28**, wherein the asymmetry parameter a is the square of the amplitude of the first spatial Fourier coefficient (|SFC1|) of the circumferential asymmetry of the flow properties within the flow path of the compressor.

30. The controller described in claim **28**, wherein said control law is $A=k_1\alpha+k_2\delta+k_3\int(\alpha_k-\alpha)dt$, α_k being a stored value for α and k_3 is a predetermined gain.

31. The controller described in claim **28**, wherein said term A is summed with an integral term $k_3\int(\alpha_k-\alpha)dt$, α_k being a stored value for α and k_3 is a predetermined gain, and said integral term having a preset minimum value and a preset maximum value.

32. The controller described in claim **31**, wherein the value of α is adjusted to reduce the difference between the integral term and said preset maximum value.

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